PROJECT BASED LEARNING

- **HOW TO INCREASE THE YEILD OF CROP IN LOW COST...**

INTRODUCTION:-

In fast developing economies like India, there is fast depletion of agricultural lands and many people migrate to cities leaving agriculture. In these conditions effective yield production of crops is a most important for planning food policies and securing food for the people .

Major Challenges facing farmers while using traditional farming m ethods:-

1. In farming climatic factors such as rainfall, temperature and humidity play an important role in the agriculture lifecycle.

solutions to this- POLYHOUSE

Polyhouse is **a type of greenhouse where specialized polythene sheet is used as a covering material under which the crops can be grown in partially or fully controlled climatic conditions. And it maintains temprature and humidity constant and crop is not affected by the atmosphere.**

It is most costly method but Gov. provides the subsidy for this project.

So farmer are using of this method extensively.

2. Every crop requires specific nutrition in the soil. There are 3 main nutrients nitrogen(N), phosphorous(P) and potassium(K) required in soil. The deficiency of nutrients can lead to poor quality of crops.

Solution:-

Nutrient management is critical in order to increase or maintain crop yields on a single parcel of agricultural land.

Determining nutrient needs-

Soil testing is a critical component in determining those nutrients that are already available and those that may be in limited supply.

Nitrogen (N), phosphorous (P), and potassium (K) are the three main nutrients that are conventionally supplied by inorganic fertilizers.

Nutrients may also be supplied by other products and processes such as organic manures, plants residues, and biological nitrogen fixation.

For good quality of the yeild and the growth of the crops nutrients are required. So nutrients are plays important Role in production of yeild.

Essential Plant Nutrients

Element	Chemical symbol	Chemical forms absorbed by crop plants
Primary Nutrients		
Nitrogen	N	NO_3^-, NH_4^+
Potassium	K	K^+
Phosphorus	P	$H_2PO_4^-$, HPO_4^{2-}. PO_4^{3-}
Secondary Nutrients		
Calicium	Ca	Ca^{2+}
Magnesium	Mg	Mg^{2+}
Sulfur	S	SO_4^{2-}
Micronutrients		
Boron	B	BO_3^{3-}
Chlorine	Cl	Cl^-
Copper	Cu	Cu^+, Cu^{2+}
Iron	Fe	Fe^{3+}
Manganese	Mn	Mn^{2+}
Molybdenum	Mo	MoO_4^{2-}
Nickel	Ni	Ni^{2+}
Zinc	Zn	Zn^{2+}

TRADITIONAL METHODS OF WEED CONTROL-

1.Weeding by hand method-

In this, farmers used to remove grass by hand and keep the field free from weeds.

2.Cultural Method-

Cultural methods, alone cannot control weeds, but help in reducing weed population.

So traditional Methods are not more effective to control weed

3.WEED control and protect the crop from the affect of the weed.(Modern Methods Of Weed Control)

Solution -

The weed control successes of the triazines led to important discoveries about new and better ways to use herbicides. **(triazine is a one kind of herbicides it contains the nitrogen compound so is it not harmful for the crop).**

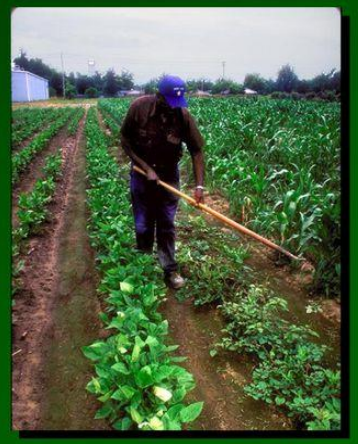
After many days of research, some crops varieties have been discovered that are not affected from weeds.

Methods of weed control

Weed Control Methods

- Cultivation - traditional weed control method; may increase erosion, spread weeds/diseases
- Planting Timing - planting date delayed to avoid or remove weeds
- Mulching - keeps light from weed seedlings
- Mowing - often used in orchards; prevents erosion
- Others - nurse crops, fire and flooding (in rice)

Farmer cultivating beans



Photograph by Bill Tarpenning, USDA/ARS.

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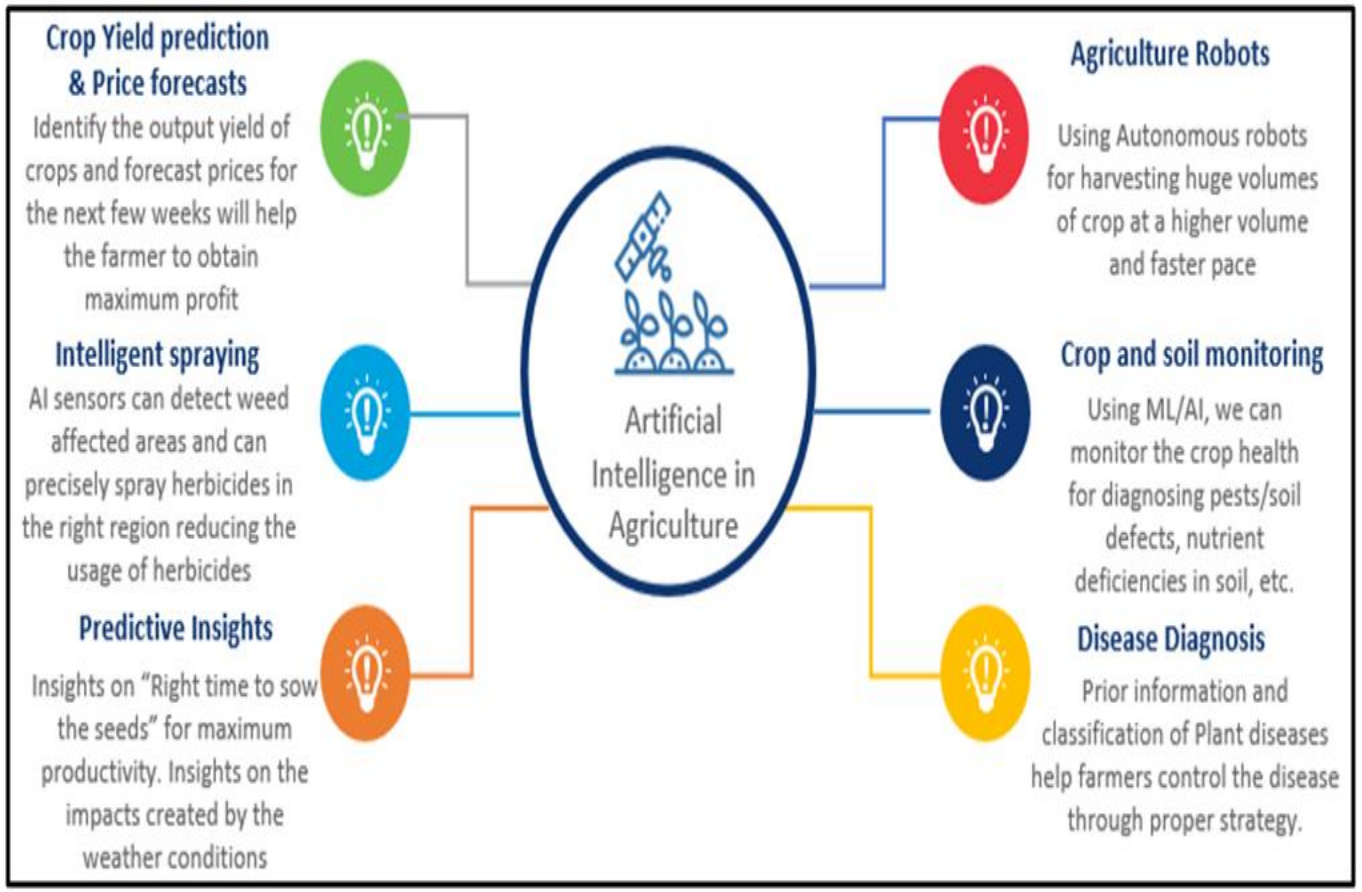
Cover the ground by mulching paper

We can overcome challenges in Agriculture Instead of traditional methods using Application of Artificial Intelligence in Agriculture as follows

AI systems are helping to **improve the overall harvest quality and accuracy** – known as precision agriculture. AI technology helps in detecting disease in plants, pests and poor nutrition of farms.

This helps in reduced usage of herbicides and cost savings.



Application of AI-

1.Auto Irrigation System-

- Automation eliminates the manual operation of opening or closing valves.
- Use of water from different sources and increased efficiency in water and fertilizer use.
- Irrigation process starts and stops exactly when required.

2.Drone Spraying-

- sprayer is very useful where human interventions are not possible for spraying of chemicals on crops including rice fields and orchard crops as well as crops under terrain lands.

REFRENCE-

1.https://www.researchgate.net/publication/326057794_Artificial_Intelligence_in_Agriculture_A_Literature_Survey.

2.https://www.ijrte.org

3.https://www.researchgate.net

4.] M. Kalimuthu, P. Vaishnavi, M. Kishore: “Crop Prediction using Machine Learning” https://ieeexplore.ieee.org/abstract/document/9214190.

Thank you...